



Exelon Generation Company, LLC
Braidwood Station
35100 South Route 53, Suite 84
Braceville, IL 60407-9619

www.exeloncorp.com

10 CFR 50.73

June 28, 2018
BW180069

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Braidwood Station, Unit 1
Renewed Facility Operating License No. NPF-72
NRC Docket No. STN 50-456

Subject: Licensee Event Report 2018-005-00 – Unit Trip on Turbine Anti-Motoring Circuit
Caused by Weld Blockage of Instrument Line with a Failed Differential Pressure
Switch Assembly

The enclosed Licensee Event Report (LER) is being submitted in accordance with 10 CFR 50.73, "Licensee Event Report System."

There are no regulatory commitments contained in this letter. Should you have any questions concerning this submittal, please contact Mr. Francis Jordan, Regulatory Assurance Manager, at (815) 417-2800.

Respectfully,

A handwritten signature in black ink, appearing to read "Marri Marchionda-Palmer".

Marri Marchionda-Palmer
Site Vice President
Braidwood Station

Enclosure: LER 2018-005-00

cc: NRR Project Manager – Braidwood Station
Illinois Emergency Management Agency – Division of Nuclear Safety
US NRC Regional Administrator, Region III
US NRC Senior Resident Inspector (Braidwood Station)
Illinois Emergency Management Agency – Braidwood Representative



LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of digits/characters for each block)

(See NUREG-1022, R.3 for instruction and guidance for completing this form
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollect.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NE0B-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. Facility Name Braidwood Station, Unit 1	2. Docket Number 05000456	3. Page 1 OF 3
---	--	---------------------------------

4. Title
Unit Trip on Turbine Anti-Motoring Circuit Caused by Weld Blockage of Instrument Line with a Failed Differential Pressure Switch Assembly

5. Event Date			6. LER Number			7. Report Date			8. Other Facilities Involved	
Month	Day	Year	Year	Sequential Number	Rev No.	Month	Day	Year	Facility Name	Docket Number
04	30	2018	2018	005	00	06	28	2018	N/A	N/A
									Facility Name	Docket Number
									N/A	N/A

9. Operating Mode	11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: (Check all that apply)			
1	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
10. Power Level	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
048	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> 73.77(a)(1)
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 73.77(a)(2)(i)
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 73.77(a)(2)(ii)
		<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> Other (Specify in Abstract below or in NRC Form 366A)	

12. Licensee Contact for this LER

Licensee Contact Francis Jordan	Telephone Number (Include Area Code) 815-417-2800
------------------------------------	--

13. Complete One Line for each Component Failure Described in this Report

Cause	System	Component	Manufacturer	Reportable to ICES	Cause	System	Component	Manufacturer	Reportable to ICES
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

14. Supplemental Report Expected				15. Expected Submission Date		
<input type="checkbox"/> Yes (If yes, complete 15. Expected Submission Date) <input checked="" type="checkbox"/> No				Month	Day	Year
				N/A	N/A	N/A

Abstract (Limit to 1400 spaces, i.e., approximately 14 single-spaced typewritten lines)

On April 30, 2018, at 1124 hours, during power ascension from refueling outage A1R20, Unit 1 tripped from approximately 48 percent power as a result of a turbine motoring generator trip. At 1126 hours, the 1A auxiliary feedwater (AF) pump was manually started to provide feedwater flow to all four steam generators.

The cause of the event was due to a welded-over sensing inlet line from the turbine exhaust piping in 2015, in combination with a failed differential pressure switch assembly, which allowed pressurization of all three differential pressure sensing devices resulting in the 2-out-of-3 turbine trip logic being satisfied. Corrective actions taken included installing a temporary modification opening a test switch in the Unit 1 anti-motoring circuit, and revoking the welding qualification for the welder involved in welding over the instrument sensing line. Actions planned include repairing the sensing line in the next Unit 1 refueling outage to restore function.

This event is reportable in accordance with 10 CFR 50.73(a)(2)(iv)(A) for "Any event or condition that resulted in manual or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B) of this section, ..."



**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

(See NUREG-1022, R.3 for instruction and guidance for completing this form
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Braidwood	05000456	2018	- 005	- 00

NARRATIVE

A. Plant Operating Conditions Before the Event:

Event Date: April 30, 2018

Unit: 1 Mode: 1 Reactor Power: 48 percent

Unit 1 Reactor Coolant System [AB]: Normal operating temperature and pressure

No structures, systems or components were inoperable at the start of this event that contributed to the event.

B. Description of Event:

On April 29, 2018 at 2322 hours, Braidwood Unit 1 completed refueling outage A1R20, synchronized to the grid, and began power ascension activities in accordance with station procedures.

On April 30, 2018, at 1124 hours, Unit 1 tripped from approximately 48 percent power as a result of a turbine motoring generator trip. At 1126 hours, the 1A auxiliary feedwater (AF) [BA] pump was manually started to provide feedwater flow to all four steam generators. At 1230 hours, after the startup feedwater pump was placed in service, the 1A AF pump was secured.

Operator response to the trip was proper and safety systems and controls performed as expected.

This event is reportable in accordance with 10 CFR 50.73(a)(2)(iv)(A) for "Any event or condition that resulted in manual or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B) of this section, ..." Specifically, for 1) 10 CFR 50.73(a)(2)(iv)(B)(1) for the "Reactor protection system (RPS) including: reactor scram or reactor trip," and 2) 10 CFR 50.73(a)(2)(iv)(B)(6) for the "PWR auxiliary or emergency feedwater system." This LER is being submitted in follow-up to ENS 53371 made on April 30, 2018.

C. Cause of Event

The cause of the event was a welded-over sensing inlet line from the turbine exhaust piping in 2015, in combination with a failed differential pressure switch assembly.

The welder that performed the weld repair failed to implement the requirements of established welding guidelines, resulting in welding over the pressure sensing inlet line, isolating the instrument line. This instrument line is used by three high pressure (HP) turbine [TA] differential pressure switches that input to a 2-out-of-3 turbine trip logic for a turbine anti-motoring circuit. Leaky across one of the three HP turbine differential pressure switch assemblies, with the exhaust sensing line isolated, pressurized the low pressure sensing line. This resulted in a low differential pressure condition on all three HP turbine differential pressure switches, thus meeting the turbine trip logic.



**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

(See NUREG-1022, R.3 for instruction and guidance for completing this form
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Braidwood	05000456	2018	- 005	- 00

NARRATIVE

D. Safety Consequences:

There were no safety consequences impacting plant or public safety as a result of this event.

The reactor trip system responded automatically due to the trip signal received. There was no loss of any function that would have prevented fulfillment of actions necessary to 1) Shutdown the reactor and maintain it in a safe shutdown condition, 2) Remove residual heat, 3) Control the release of radioactive material, or 4) Mitigate the consequences of an accident.

There was no loss of safety function for this event.

E. Corrective Actions:

Completed Corrective Actions:

- A temporary modification was installed opening a test switch in the Unit 1 Anti-motoring circuit to prevent undesired turbine trips until the degraded condition is resolved.
- Welding Qualification was revoked for the welder involved in welding over the instrument sensing line.

Planned Corrective Actions:

- Repair the sensing line in the next Unit 1 refueling outage to restore function.

F. Previous Occurrences:

None

G. Component Failure Data:

<u>Manufacturer</u>	<u>Nomenclature</u>	<u>Model</u>	<u>Mfg. Part Number</u>
N/A	N/A	N/A	N/A